Plastics

Industrial Assessment

Industrial Technologies Program

Assessment Date: July 10, 2003

Benefits:

- Saves almost $35,000 per year as a result of implemented projects
- Lowers electricity use by nearly 633,000 kWh per year and natural gas use by about 211 MMBtu per year
- Has payback periods ranging from less than 1 month to 29 months

Applications:

The assessment team identified opportunities to decrease energy use and costs, increase productivity, and enhance corporate competitiveness by focusing primarily on manufacturing processes as well as on lighting, heating, compressed air use, and waste management.

Dickten & Masch Manufacturing Company: Industrial Energy Assessment Achieves $35,000 in Cost Savings for Plastics Manufacturer

Summary

The University of Wisconsin–Milwaukee's Industrial Assessment Center (IAC) conducted an energy audit at Dickten & Masch Manufacturing Company's production facility in Nashotah, Wisconsin; as a result, the company is already saving nearly $35,000 per year in operating costs. The IAC, sponsored by the U.S. Department of Energy (DOE) Industrial Technologies Program (ITP), is one of 26 across the nation in which faculty and students provide eligible small- and medium-sized manufacturers with no-cost energy assessments. This assessment project was sponsored by ITP and The Society of the Plastics Industry, Inc. (SPI), a DOE Allied Partner.

Opportunities for saving electricity at the Neshotah plant involved installing more energy-efficient lighting and using variable frequency drives for motors. The assessment team also recommended obtaining better control of the operation of the compressed air system as well as using outside air in the system. The team found that scheduling forklift-charging activities during off-peak hours would reduce overall energy demand. And, they identified an opportunity for gas savings by recommending temperature setbacks in the facility. In the first year following the assessment, Dickten & Masch implemented 66% of the assessment recommendations for saving energy and reducing costs.

Company Background

Dickten & Masch Manufacturing Company is a custom manufacturer of thermalset and injection-molded plastics. Its Nashotah facility generates approximately $50 million in sales and processes about 15 million pounds of a variety of plastics annually. The facility assessed measures 144,000 square feet; the production area covers 108,000 square feet. At the time of the assessment, production processes consumed more than 13.5 million kWh of electricity and nearly 6,000 MMBtu of natural gas per year, for a total annual energy cost of more than $700,000.

Assessment Approach

A team consisting of students and a director from the University of Wisconsin–Milwaukee IAC performed the assessment of this facility on July 10, 2003. The team met with plant personnel, toured the facility, and collected data. The team reviewed potential energy-saving opportunities and presented their findings to the plant's managers. The assessment was led by IAC Assistant Director Dr. Vjekoslav Pavelic.

Recommendations

Energy Conservation Awareness. In addition to the recommendations listed in the table, the assessment team identified several energy conservation practices that employees at the Dickten & Masch facility use to significantly reduce energy consumption. For example, management encourages employees to turn off or shut down idle processing equipment, lights, fans, air compressors, and other energy-consuming items when they are not in use.

Energy-Efficient Equipment. While identifying new ways to increase the plant equipment's energy efficiency, as shown in the table below, the assessment team found that the facility has an automated part-removal system and an efficient automated feed system. These systems reduce spillage and scrap while they increase accuracy and productivity. The facility has also installed dock seals on shipping doors to reduce the loss of heated and conditioned air through the doors.

Results

Dickten & Masch Manufacturing Company implemented four of the six recommendations made by the IAC. These changes will result in annual savings of almost $35,000, as shown in the table. Energy conservation opportunities that were implemented will reduce electrical usage by more than 632,000 kWh, thus reducing electrical demand by approximately 1,528 kW-months per year (kW-mo/yr)[1]. Annual natural gas usage will also be reduced by about 211 MMBtu.

Implemented Recommendations for the Dickten & Masch Plant in Nashotah, WI

Project Category/ Recommendation	Annual Resource Savings	Annual Cost Savings	Implementation Cost	Payback Period
Facility Install energy-efficient lighting	562,170 kWh; 1,124.3 kW-mo/yr	$26,308	$61,875	29 months
Demand Charge forklift trucks during off-peak hours	255.2 kW-mo/yr	$4,115	$400	2 months
Process Supply Use outside air for a compressor	61,682.8 kWh; 148.3 kW-mo/yr	$3,128	$1,980	8 months
Heating Implement temperature setbacks in the facility	210.6 MMBtu	$1,192	$1,600	17 months
Total	**632,852.8 kWh/yr; 1,527.8 kW-mo/yr; 210.6 MMBtu/yr**	**$34,743**	**$65,855**	

[1] kW-months per year represents total kW savings per year, based on kW savings per month.

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Project Partners:

Dickten & Masch Manufacturing Company
Nashotah, WI

The Society of the Plastics Industry, Inc.
Washington, DC

For Additional Information:

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